REMARKS

Claims 1, 2, 4-7, 9-12, 14-17, 19-22 and 25-46 are pending in the application. Claims 1, 2, 4-7, 9-12, 14-17, 19-22 and 25-46 are rejected under 35 U.S.C. § 103(a) as being deemed unpatentable over U.S. Patent No. 5,699,440 (Carmeli) in view of U.S. Patent No. 6,052,124 (Stein *et al.*). Of the Claims, Claims 1, 6, 11, 16, and 21 are independent Claims. The rejections are respectfully traversed and reconsideration is requested.

The Applicants' claim a method for calibrating a camera by determining pixel intensity drop off from a digitized image of a blank textureless surface and "computing an intrinsic parameter of the camera other than pixel intensity drop off using substantially only the determined pixel intensity drop off such that camera calibration is achieved according to the determined pixel intensity drop off to the exclusion of other image factors." In the applicants' claimed invention, the calibration is performed based on the result of a performance test. For example, the result of pixel intensity drop off is used to compute the focal length of the camera, as claimed by the applicants in claim 46.

The cited prior art Carmeli merely discusses testing the performance of an electro-optical system. One of the performance measurements is an illumination uniformity parameter caused by a vignetting effect. Carmeli does not discuss the use of any of the performance measurements to calibrate a camera. Carmeli does not even discuss calibration of the camera. Instead, calibration measurements are given (stored in a database) and system elements are described as "pre-calibrated" in Carmeli. This is consistent with the Office Action at hand. According to the Office Action, Carmeli "tests the performance of the system ... where the database of memory (computer 17) stores pre-calibrated data of the devices/components for proper alignment." (*See* Paper No. 23, Page 3-4.) Also, according to the Office Action, Carmeli "is able to load the parameters of a selected device into the database, in the event the particular device is not stored in the database." Thus, Carmeli is not directed in the least to calibrating cameras. The intrinsic parameters of the camera are either pre-stored in a database or loaded into the database.

The illumination uniformity parameter is the end result. That is, the illumination uniformity of a non-calibrated component (camera) in the system is computed from the measured illumination uniformity of the electro-optical device. (*See* Col. 11, lines 10-16; Col. 7, line 40 -

Col. 8 line 64.) Carmeli only briefly mentions a prior art test for performance involving visual comparison which is substantially subjective. (*See* Col. 3, lines 5-13.)

According to the Office Action, Carmeli "remains silent on computing intrinsic parameters of the camera other than pixel intensity drop off using the determined pixel intensity drop off". (*See* Paper No. 23, Page 3.) Also, according to the Office Action, "Carmeli does not specifically disclose, computing the focal length of the camera using the determined pixel intensity drop off ." (*See* Paper No. 23, Page 9.) Thus, Carmeli does not teach or suggest computing the focal length of the camera or any other intrinsic parameters from the result of the illumination uniformity test as in the present invention. Further Carmeli does not teach or suggest computing such intrinsic parameters based on "substantially only the determined pixel intensity drop off such that camera calibration is achieved according to the determined pixel intensity drop off to the exclusion of other image factors" as now claimed

Stein does discuss computing intrinsic parameters of the camera. However, Stein uses specialized patterns to compute the parameters such as focal length. Stein discusses a calibration technique that uses some form of image feature, or registration between multiple images in order to extract camera parameters. Thus, Stein merely discusses well known prior art techniques for computing focal length as discussed in the background of the applicants' specification. (*See* Applicants' specification Page 3, line 7-9.)

If Stein is just relied on for its teaching of camera calibration, Stein does not add to Carmeli in which calibration data is given (predefined). The combination merely teaches the use of specialized patterns to obtain the intrinsic parameters, loading the intrinsic parameters into a database and using the intrinsic parameters to test the performance of the camera. There is no suggestion to combine Carmeli and Stein, and even if combined they fail to teach "computing an intrinsic parameter of the camera other than pixel intensity drop off using substantially only the determined pixel intensity drop off such that camera calibration is achieved according to the determined pixel intensity drop off to the exclusion of other image factors" as claimed by the Applicants in Claim 1.

Claims 2, 4-5, 7, 9-10 are dependent on Claims 1 and 6 respectively and thus include this limitation over the prior art. Independent Claim 11 recites a like distinction in terms of a computer system and thus similarly patentably distinguishes over the prior art. Independent

Claims 16 and 21 recite a like distinction in terms of an apparatus. Claims dependent on Claims 11, 16 and 21 include this limitation over the prior art. Claim 46 includes like limitations distinguishing the cited art.

Accordingly, the present invention as now claimed is not believed to be anticipated by or made obvious from the cited art or any of the prior art. Removal of the rejections under 35 U.S.C. 103(a) and acceptance of Claims 1, 2, 4-7, 9-12, 14-17, 19-22 and 25-46 is respectively requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Dated: 12/10/03